BILLING CODE 3510-DS-P

DEPARTMENT OF COMMERCE
International Trade Administration
Application(s) for Duty-Free Entry of Scientific Instruments

Pursuant to Section 6(c) of the Educational, Scientific and Cultural Materials Importation Act of 1966 (Pub. L. 89-651, as amended by Pub. L. 106-36; 80 Stat. 897; 15 CFR part 301), we invite comments on the question of whether instruments of equivalent scientific value, for the purposes for which the instruments shown below are intended to be used, are being manufactured in the United States.

Comments must comply with 15 CFR 301.5(a)(3) and (4) of the regulations and be postmarked on or before (Insert date 20 days after publication in the FEDERAL REGISTER). Address written comments to Statutory Import Programs Staff, Room 3720, U.S. Department of Commerce, Washington, D.C. 20230. Applications may be examined between 8:30 A.M. and 5:00 P.M. at the U.S. Department of Commerce in Room 3720.

Docket Number: 12-064. Applicant: University of Pittsburgh, 4200 Fifth Ave., Pittsburgh, PA 15260. Instrument: Dilution Refrigerator with 18T Solenoid Superconducting Magnet. Manufacturer: Leiden Cryogenics, the Netherlands. Intended Use: The instrument will be used for three purposes: to develop ways for preserving quantum information in a way that is immune to a wide variety of decoherence mechanisms by using predicted topological properties of superconductors in two dimensions, to program fundamental couplings at near-atomic scales and quantum simulation of “metasuperconductors” by using the extreme nanoscale precision with which the $LaAlO_3/SrTiO_3$ interface can be gated, and to develop new mechanisms for the transfer of quantum information between long-lived localized states (nitrogen-vacancy centers) and delocalized states (superconducting resonators). The experiments will combine the unique local control capable with the $LaAlO_3/SrTiO_3$ interface with the natural tendency of $SrTiO_3$ to become superconducting to develop superconducting structures with vortices that will be manipulated to achieve topologically protected quantum computation, as well as electrostatic programming of the $LaAlO_3/SrTiO_3$ interface with V(x,y) to create new electronic states of matter which themselves can become superconducting. The unique properties of this instrument are the capability of cooling the sample below the superconducting transition temperature (Tc~200mK), to apply large magnetic fields (>18T) to investigate the large spin-orbit present in these samples (Bso~15T), and the ability to orient the sample in any orientation relative to the magnetic fields. Justification for Duty-Free Entry:

There are no instruments of the same general category manufactured in the United States. Application accepted by Commissioner of Customs: December 13, 2012.

Docket Number: 12-066. Applicant: University of Pittsburgh, 4200 Fifth Ave., Pittsburgh, PA 15260. Instrument: mK Scanning Probe Microscope. Manufacturer: Nanomagnetics, Turkey. Intended Use: The instrument will be used for three purposes: to develop ways for preserving quantum information in a way that is immune to a wide variety of decoherence mechanisms, by using predicted topological properties of superconductors in two dimensions, to program fundamental couplings at near-atomic scales and quantum simulation of "metasuperconductors" by using the extreme nanoscale precision with which the $LaAlO_3/SrTiO_3$ interface can be gated, and to develop new mechanisms for the transfer of quantum information between long-lived localized states (nitrogen-vacancy centers) and delocalized states (superconducting resonators). The experiments will combine the unique local control capable with the $LaAlO_3/SrTiO_3$ interface with the natural tendency of $SrTiO_3$ to become superconducting to develop superconducting structures with vortices that will be manipulated to achieve topologically protected quantum computation, as well as electrostatic programming of the $LaAlO_3/SrTiO_3$ interface with V(x,y) to create new electronic states of matter which themselves can become superconducting. The unique properties of this instrument are the capability of scanning probe microscopy at base temperature (T<50mK), and to locally (on nanometer scales) gate, modify, and probe nanowire devices and quantum dot arrays. Justification for Duty-Free Entry: There are no instruments of the same general category manufactured in the United States. Application accepted by Commissioner of Customs: December 13, 2012.

Docket Number: 13-002. Applicant: University of California, Berkeley, Stanley Hall, Room B306, Berkeley, CA, 94720. Instrument: High Speed Atomic Force Microscope (HSAFM). Manufacturer: Research Institute of Biomolecule Metrology (RIBM), Japan. Intended Use: The instrument will be used for a number of experiments including tracking the enzymatic activity of an RNA II polymerase along its template, a DNA gene, while synthesizing the messenger RNA. Having access to higher scan rates in an aqueous environment will provide an unprecedented view of transcription through nucleosomal DNA. By visualizing transcription steps, it is possible to precisely follow in real time the dynamics of events that accompany transcription by RNAP II through the nucleosome including spontaneous DNA unwrapping from the core particle, histone transfer, and histone dissociation under different conditions while determining the main factors that regulate nucleosome stability/instability during transcription. In addition to this capability, the instrument will have the time and spatial resolution to visualize individual tubulin subunits as they arrive at the microtubule end and will complement cryo-EM studies at

near nanometer resolution on stabilized intermediates in the assembly process. The unique characteristics of this instrument are the ability to capture images at a rate of up to 15-20 frames per second, reading scan rates as high as 25 frames per second, resonant frequencies of 3.5 MHz in air and 1.2 MHz in water, spring constants of 0.2 N m^{-1}, a quality factor in water of ~2, and a response time in water of ~0.5 microseconds. Justification for Duty-Free Entry: There are no instruments of the same general category manufactured in the United States. Application accepted by Commissioner of Customs: January 17, 2013.

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Gregory W. Campbell
Director of Subsidies Enforcement
Import Administration

_January 25, 2013_____
DATE

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